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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/805,591

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EXAMINER

TORRES, JUAN A

ART UNIT

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2611

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/805,591	<b>Applicant(s)</b> CHIENG ET AL.	
	<b>Examiner</b> JUAN A. TORRES	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2, 12, 13 and 22-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2, 12-13 is/are allowed.
- 6) ☒ Claim(s) 22-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because:

a) The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: “210”, “220” and 230” (see paragraphs [0034] and [0041]).

b) The drawings are objected to under 37 CFR 1.83(a) because they fail to show “a third input digital data stream and to convert the third input digital data stream from a corresponding input sample rate to the predetermined output sample rate, wherein the sample rate converter includes a third counter coupled to receive the clock signal from the clock source and configured to count cycles of the clock signal in a sample period of the third input digital data stream, wherein the data processor is coupled to the third counter and is configured to read a third number of cycles counted by the third counter, to calculate a third input sample rate of the third input digital data stream by multiplying the first input sample rate by the ratio of the third number of cycles to the first number of cycles, and convert the third input digital data stream from the third input sample rate to the predetermined output sample rate” as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

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prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims 22-27 and 29-38 objected to because of the following informalities:

Regarding claim 22, the recitation in line 6 of claim 22 "includes" is improper, because it is improperly constructed (see line 1 of claim 22); it is suggested to be changed to "includes:"

Regarding claims 23-27 and 29-30, they are objected because they depend directly or indirectly from claim 22 and claim 22 is objected.

Regarding claim 23, the recitation in line 6 of claim 23 "stream" is improper, because it is improperly constructed (see line 20 of claim 22); it is suggested to be changed to "stream, and"

Regarding claim 31, the recitation in line 8 of claim 31 "stream," is improper, because it is improperly constructed (see line 7 of claim 31); it is suggested to be changed to "stream;"

Regarding claim 31, the recitation in line 11 of claim 31 "cycles," is improper, because it is improperly constructed (see line 8 of claim 2); it is suggested to be changed to "cycles; and"

Regarding claim 32, the recitation in line 7 of claim 32 "cycles, and" is improper, because it is improperly constructed (see line 8 of claim 2); it is suggested to be changed to "cycles; and"

Regarding claims 32-38, they are objected because they depend directly from claim 31 and claim 31 is objected.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 32 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This is a written description requirement rejection (emphasis added).

The specification doesn't describe "receiving a third input digital data stream; counting a third number of cycles of the clock signal in a sample period of the third input digital data stream; calculating a third input sample rate of the third input digital data stream by multiplying the first input sample rate by the ratio of the third number of cycles to the first number of cycles, and converting the third input digital data stream from the third input sample rate to the predetermined output sample rate"

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 28 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation "claim 1" in 1. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22, 26, 31, 35 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Rabenko (US 20010033583 A1).

Regarding claims 22 and 31, receiving a clock signal from a clock source (figure 17 block 533, paragraph [0154] and [0157]); receiving a first input digital data stream

(figure 17 block 534(a), paragraph [0154] and [0157]); receiving a second input digital data stream (figure 17 block 534(a), paragraph [0154] and [0157]); counting a first number of cycles of the clock signal in a sample period of the first input digital data stream and a second number of cycles of the clock signal in a sample period of the second input digital data stream (figure 17 block 537, paragraph [0154] and [0157]); estimating a first input sample rate of the first input digital data stream (figure 17 block 537(a), paragraph [0154] and [0157]), calculating a second input sample rate of the second input digital data stream by multiplying the first input sample rate by the ratio of the second number of cycles to the first number of cycles (figure 17 block 534, paragraph [0154] and [0157]), and converting each of the first and second input digital data streams from the corresponding input sample rates to a predetermined output sample rate (figure 17 block 534, paragraph [0154] and [0157]).

Regarding claims 26 and 35, Rabenko discloses claims 22 and 31, Rabenko also discloses low-pass filtering the first number of cycles and the second number of cycles (figure 17 block 543 and 543', paragraph [0154] and [0157]).

Regarding claim 37, Rabenko discloses claim 31, Rabenko also discloses that the first and second input sample rates are different (figure 17 block 543 and 543', paragraph [0154] and [0157]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabenko (US 20010033583 A1).

Regarding claims 23 and 32, Rabenko discloses claims 22 and 31, Rabenko doesn't specifically disclose receiving a third input digital data stream; counting a third number of cycles of the clock signal in a sample period of the third input digital data stream; calculating a third input sample rate of the third input digital data stream by multiplying the first input sample rate by the ratio of the third number of cycles to the first number of cycles, and converting the third input digital data stream from the third input sample rate to the predetermined output sample rate. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a third or more data stream in the methodology disclosed by Rabenko. The suggestion/motivation for doing so would have been to process a third or more signals. Claims 23 and 32 are not patentable different from the Rabenko patent, because it is "to duplicate a part for a multiple effect" (see *St. Regis Paper Company v. Bemis Company, Inc.*, 193 USPQ 8 (CA 7 1977))

Claims 24, 25 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabenko as applied to claims 22 and 31 above, and further in view of Loh (US 5621805 A).

Regarding claims 24 and 36, Rabenko discloses claims 22 and 31 Rabenko doesn't specifically disclose that the first and second input sample rates are not restricted to a set of predetermined sample rates. Loh discloses first and second input



sample rates are not restricted to a set of predetermined sample rates (column 6 lines 27-32). Rabenko and Loh are analogous art because they are from the same solving problem of rate conversion and synchronization. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the algorithm disclosed by Rabenko with the arbitrary rate disclosed by Loh. The suggestion/motivation for doing so would have been to allow different data rates (Loh Column 6 lines 27-32).

Regarding claim 25, Rabenko and Loh discloses claim 24, Rabenko also discloses that the first and second input sample rates are different (figure 17 block 543 and 543', paragraph [0154] and [0157]).

Claims 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabenko as applied to claims 22 and 31 above, and further in view of Tomisawa (US 4641326 A).

Regarding claims 27 and 33, Rabenko discloses claims 22 and 31 Rabenko doesn't specifically disclose resetting the first and second counters each time a succeeding frame sync signal is received. Tomisawa discloses resetting the first and second counters each time a succeeding frame sync signal is received (figure 4 block 7 and 12 column 10 lines 30-32). Rabenko and Tomisawa are analogous art because they are from the same solving problem of synchronization. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the algorithm disclosed by Rabenko with the resetting technique disclosed by Tomisawa.

The suggestion/motivation for doing so would have been to provide a counter circuit operable in synchronism with a frame of a digital data signal (Tomisawa abstract).

Claims 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabenko as applied to claims 22 and 31 above, and further in view of Holland (US 5367162 A).

Regarding claims 29 and 34, Rabenko discloses claims 22 and 31 Rabenko doesn't specifically disclose storing data from the first input digital data stream in a first FIFO and storing data from the second input digital data stream in a second FIFO. Holland discloses storing data from the first input digital data stream in a first FIFO and storing data from the second input digital data stream in a second FIFO (figure 5 blocks 84, 86, 90 and 92 column 6 lines 43-39 and column 15 lines 43-52). Rabenko and Holland are analogous art because they are from the same solving problem of synchronization. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the algorithm disclosed by Rabenko with the FIFO buffers disclosed by Holland. The suggestion/motivation for doing so would have been to maximize the throughput (Holland column 16 lines 35-43).

Claims 30 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabenko as applied to claims 22 and 31 above, and further in view of Midya (US 6665338 B1).

Regarding claims 30 and 38, Rabenko discloses claims 22 and 31 Rabenko doesn't specifically disclose a pulse-width modulated digital audio amplifier. Midya discloses a pulse-width modulated digital audio amplifier (figure 1 column 2 lines 19-38).

Rabenko and Midya are analogous art because they are from the same solving problem of rate conversion and synchronization. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the algorithm disclosed by Rabenko with the pulse-width modulated digital audio amplifier disclosed by Midya. The suggestion/motivation for doing so would have been to obtain high efficiency and high accuracy (Midya column 1 lines 26-31).

***Allowable Subject Matter***

Claims 2 and 12-13 are allowed.

The following is an examiner's statement of reasons for allowance: claims 2 and 12-13 are allowed because a comprehensive search of prior art failed to teach, either alone or in combination, receiving a clock signal from a clock source, receiving a first digital data stream, receiving a second digital data stream, counting a first number of cycles of the clock signal in a sample period corresponding to a first digital data stream and a second number of cycles of the clock signal in a sample period corresponding to a second digital data stream, wherein counting the first number of cycles for the first digital data stream comprises incrementing a first counter once for each cycle after a frame sync signal is received in the first digital data stream and counting the second number of cycles for the second digital data stream comprises incrementing a second counter once for each cycle after a frame sync signal is received in the second digital data stream, and converting at least one of the first and second digital data streams from a corresponding input sample rate to a predetermined sample rate based on the

number of cycles counted for the corresponding digital data stream, as the applicant has claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Adams (US 5475628 A) discloses an asynchronous digital sample rate converter,

b) Savell (US 6819732 B1) discloses an asynchronous sample rate estimation using reciprocal frequency error minimization,

c) Savell (US 6324235 B1) discloses an asynchronous sample rate tracker.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUAN A. TORRES whose telephone number is (571)272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres  
04/29/2008

/Juan A Torres/

/Mohammad H Ghayour/  
Supervisory Patent Examiner, Art Unit 2611